ERIC Document Resume | See Instruction Sheet | DATE OF RESUME 9/21/65 | DATE RECEIVED

A. PUBLICATION DATA

1. ERIC NUMBER: ED002175 | 2. ORIGINATOR CONTROL NO(S).: N.A. | 3. IDENTIFICATION NO.: 2900 | DO NOT WRITE IN SPACE BELOW

4. AUTHOR(S): Board of Education, Pasadena City Schools, Pasadena, California

5. TITLE OF DOCUMENT ABSTRACTED: Technological Innovation and Good Teaching - More Effective Instruction through Technology

6. PUBLICATION TITLE: Pasadena Schools in Action

7. EDITOR(S): Hornbeck, Ralph W.

8. PLACE OF ORIGIN: Pasadena City Schools, ORG. Pasadena, ST. California

9. PUBLISHER OR SOURCE: Pasadena City Schools, Education Center, 351 S. Hudson, Pasadena, California

CITY, STATE

TELE. EXT.

INST/LOC CODE

10. VOL.	11. PAGES	12. MO./YR.	13. TOTAL PP.
8	N.A.	4/65	8

MICROFILM COPY AVAILABLE: YES ☒ NO ☐

COPYRIGHT GRANTED: YES ☐ NO ☒

COPYRIGHT RELEASE FILED: YES ☐ NO ☐

TYPE OF REPORT: PROPOSAL ☐ IN-PROGRESS ☐ FINAL ☒ FOLLOW-UP ☐

OTHER ERIC REFERENCES:

ERIC SATELLITE CODE

B. INDEXING DATA

14. SUBJECT AREA

15. TYPE OF ENDEAVOR: report

16. INDEXING TERMS (6-12)

technological instruction; listening-viewing center; teaching aids; programed learning; language laboratories; educational television; technology; audiovisual aids; instructional technology; teaching machines; vocational education; music; reading; curricula; college

17. ABSTRACT (MAX. 250 WORDS)

Listening-viewing centers are being used in schools throughout the United States. They are effective in improving instruction and increasing teacher efficiency. Language laboratories meet the demand for person-to-person communications. They permit all students to participate at the same time without interference from others; thus they increase effective participation. Programed learning and teaching machines are designed to individualize instruction and to aid the teacher. They are self-corrective, allow for individual pacing, free the teacher for more creative teaching, and, in some of the more sophisticated types, prevent cheating and can provide a record of errors and data for subsequent analysis and statistical study.

Educational television is an important influence in today's classroom. It permits many authorities and master teachers to visit the classrooms, and it permits students to witness vivid presentations within their own room that they could not otherwise see. It is being used in many curricular areas. Audiovisual techniques have made a tremendous impact on modern education. Their primary function is to provide experiences whereby a student can build up a storehouse of meanings. Audiovisual materials make meanings more exact, more concrete, and more valid.

Advances in technology, particularly in the automation of mechanical processes, have both eliminated old jobs and created new ones. Curriculum and teaching methods have responded with additions and changes to meet the need. One technological device that has been designed to implement the teaching of business subjects is the secretarial laboratory. Technology has also influenced the approaches to music and reading.

ERIC No. | 18. SOURCE OF ABSTRACT

C. FUNDING DATA

19. SUPPORTING ORGANIZATION	20. DIVISION OR DEPT.	21. CONTRACT NO. / PROJECT NO.
	22. TOTAL COST OF PROJECT	
	23. DURATION OF PROJECT	U.S. Department of Health, Education, and Welfare Office of Education

ERIC Form 1

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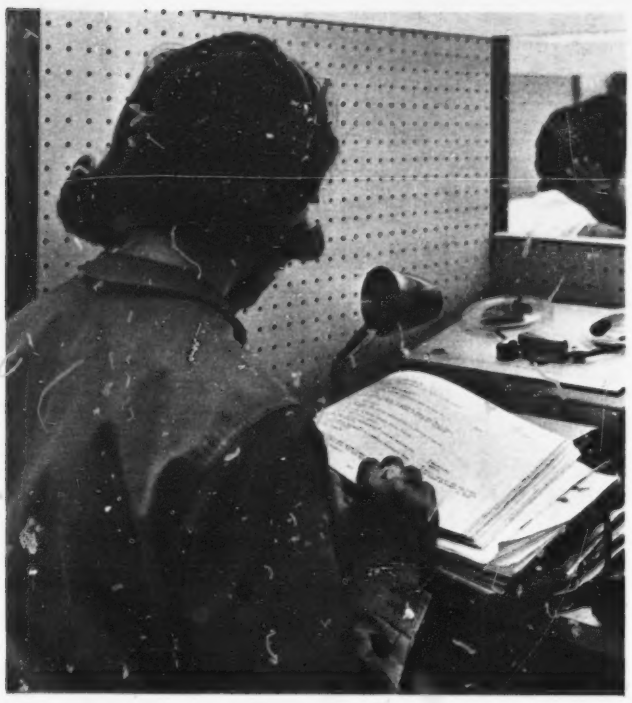
INSTRUCTIONAL TECHNOLOGY - U.S.C.
2900

Pasadena Schools — in Action

ED002175

VOL. VII APRIL, 1965 No. 8



Technological Innovation And Good Teaching

In 1965, creative teachers are effectively using some promising and exciting new tools of learning. These are beyond the novelty stage and they are being used successfully in Pasadena and other school systems.

The technological revolution is producing electronic teaching aids which are helping teachers to bring many new resources to the classroom and assisting teachers to individualize instruction. The effectiveness of the new teaching aids depends on the quality of the programs and the imaginative selection and use of the aids.

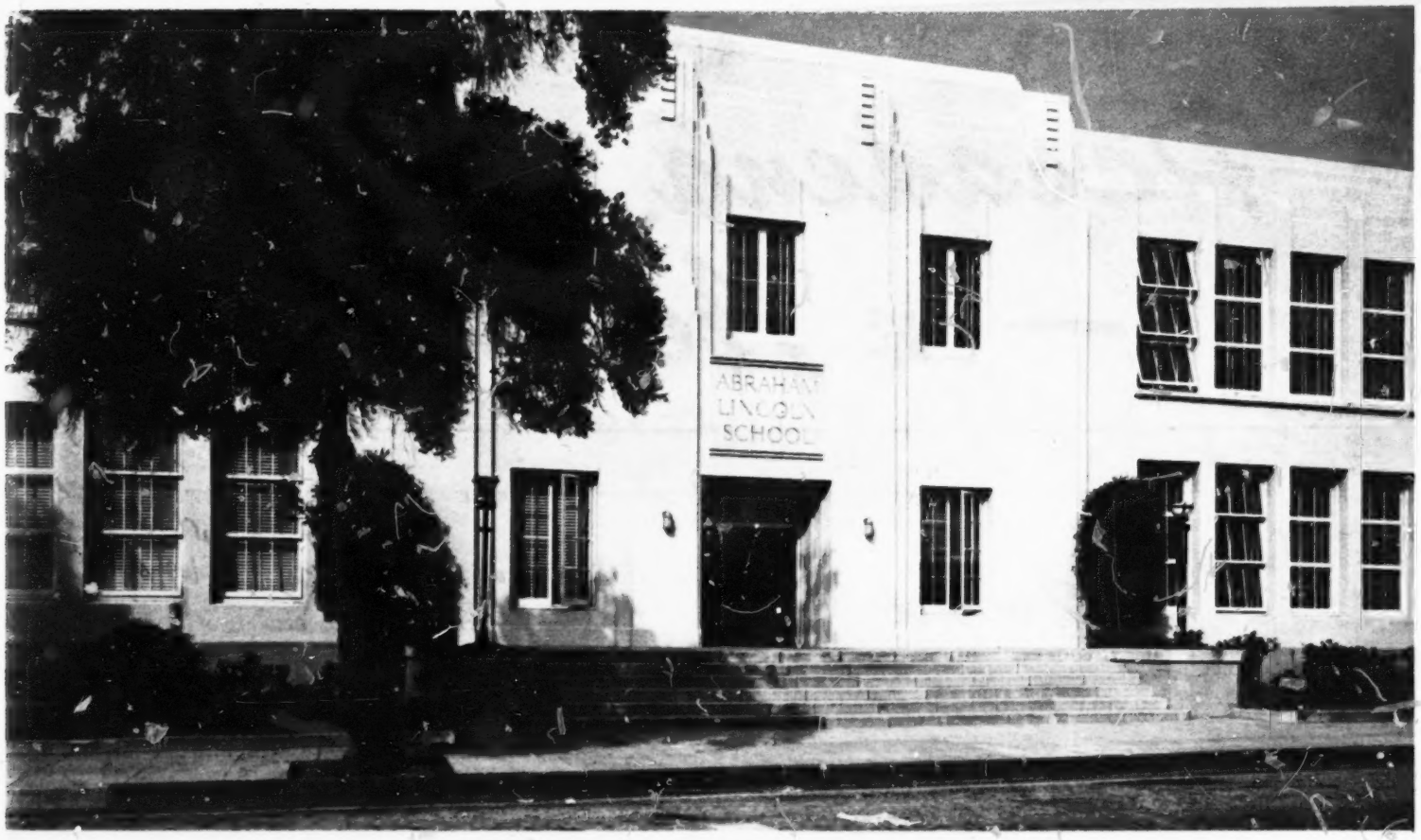
In the capable hands of strong teachers, television, listening-viewing centers, language laboratories, programmed learning, and even a new computer center and the most modern planetarium are increasing the teacher's effectiveness many-fold and freeing the teacher for more creative leadership with the entire class and with individuals.

The onetime fear that technology might replace the teacher with some kind of automated classroom has been proven groundless. Nothing can replace the creative, imaginative, understanding and inspiring teacher.

We do know that in 1965 and the challenging years ahead, schools must be geared to cope with rapid change and teachers must have the benefit of the most up-to-date instructional aids for creative teaching.

Robert E. Jenkins
Superintendent of Schools

Language Laboratories



School of the Month-

Abraham Lincoln Elementary School

Pasadena's first "Lincoln School" was built on Walnut Street in 1888. When a new building was constructed at Lincoln Avenue and West Peoria Street in 1895, the name "Abraham Lincoln Elementary School" was given to this fine new structure. This original building was a two-story structure facing Lincoln Avenue, with a small building for a kindergarten at the rear. The Parent-Teacher Association was established in 1900.

Lincoln School was to suffer several calamities: in 1915, fire destroyed the upper story of the original building. In 1918, the kindergarten building was destroyed by a cyclone. All buildings were damaged by the earthquake of 1933.

Since those days, fine new buildings have been constructed, and some of the buildings remodeled.

Pasadena Schools in Action

Official Publication of the
PASADENA CITY SCHOOLS
Education Center
351 South Hudson
Pasadena, California

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Second Class Postage Paid at Pasadena, California
Published monthly September through May

During the 76 years of existence, fifteen principals have served Lincoln School: Clara A. Burr, 1889-90; Caspar W. Hodson, 1890-93; G. W. Strominger, 1893-94; Frances S. Burt, 1894-96; W. J. Hornby, 1896-1902; Harley P. Chandler, 1902-03; George A. Boden, 1903-04; Paul E. Stewart, 1904-05; Andrew Ewing, 1905-14; Rufus Mead, 1914-17; Claude E. Earl, 1917-40; L. O. Bigham, 1940-43; Harold P. Blome, 1943-52; John W. Haines, 1952-63; and Dr. Andrew M. Joyce, 1963 to the present time.

Over the years Lincoln School has had an enviable reputation for a high-calibre staff, a forward-looking instructional program, well-equipped facilities, and effective parent-school cooperation.

Because of this reputation, Lincoln was among eight Pasadena schools selected by the State Department of Education to carry out a two-year pilot project (1963-1964), to find solutions to problems of children with diverse cultural backgrounds.

Through the cooperative planning of teachers, district staff, P.T.A., and community representatives, the Lincoln School HOPE (Higher Opportunities in Pasadena Education) program was developed. This pilot project is unique in the State of Califorina in that it is a total school project, from which it is hoped that children of all abilities will benefit; it is also unique in the scope and depth of the various programs included in the project.

The staff at Lincoln believes that, though much remains to be done in helping children with diverse cultural backgrounds, the following aspects of the project at Lincoln are providing some solutions:

- **Stepped-up listening and oral language programs** at all grade levels.
- **Language enrichment program** in grades one and

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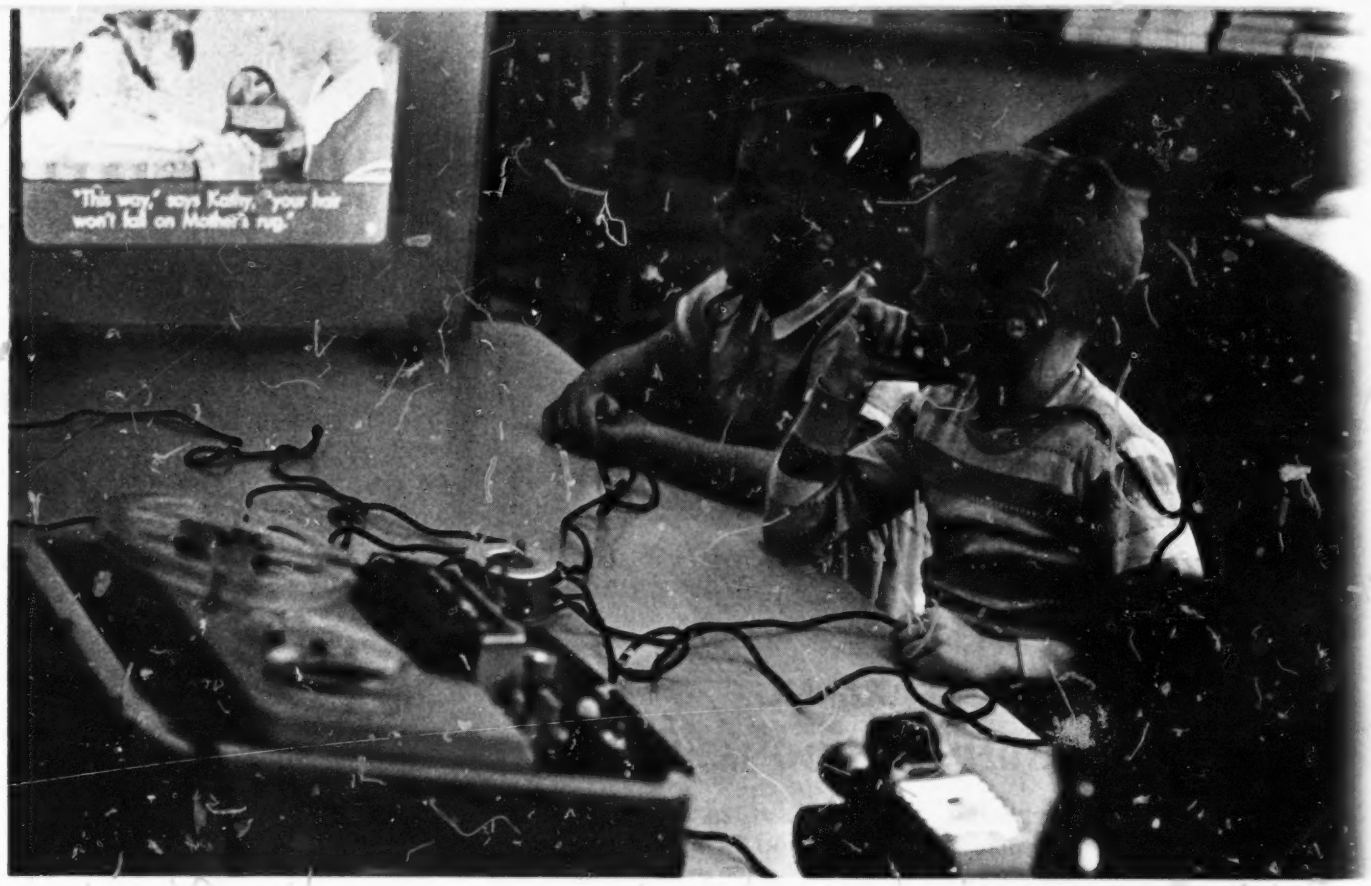


Elementary children using listening-viewing center

More Effective Instruction Through Technology

LANGUAGE LABORATORIES

Many forces are at work to dramatically shrink the effective size of our world and make all men neighbors. One of the results: an increasing demand for person-to-person communication. Foreign language instruction has responded to this demand, with greater emphasis on speaking and understanding spoken language.

To meet this need the *language laboratory* has been developed. A language laboratory consists of individual booths with tape recorders and earphones. Through these, students hear the foreign language, and make appropriate responses into a microphone. Students then replay the lessons to hear and compare their own responses with the "master" — and thereby perfect their speaking and understanding of the language.

Language laboratories permit all students to participate at the same time without interference from others; thus active, effective participation is increased many fold. Earphones exclude extraneous noises and encourage greater concentration. Each student may proceed at his own rate, since advanced, regular, and easier work may be presented at the same time.

Though close teacher guidance is given to the entire program, the many hours which the teacher formerly devoted to general class question-and-answer activities may now be directed to other aspects of the program, including giving more help to individual students.

Language laboratories are now in use in each of Pasadena's junior and senior high schools, tape recordings and high-fidelity records in each elementary school.

LISTENING-VIEWING CENTERS

The Listening-Viewing Center, which was originated in one Pasadena school, is being used today throughout this school district and in schools over the United States. Its effectiveness for improving instruction and increasing teacher efficiency has been well demonstrated by teachers in Pasadena and across the country.

The equipment of the Listening-Viewing Center consists of 8 to 12 earphones which plug into a *junction box*, a six-foot rectangular table, a record player and/or a tape recorder, a filmstrip projector, a small screen, and a picture easel.

Since no sound is heard from the Center, other than children responding quietly to direction on the record or tape, two groups of children can receive instruction at the same time — one group from the teacher, the other at the Listening-Viewing Center.

Materials are programmed into the Listening-Viewing Center in all areas of the curriculum. These materials, some commercially produced and some produced by Pasadena teachers, are available from the district's Audio-Visual Department.

The Pasadena City Schools have led the nation not only in the use of the Listening-Viewing Center, but also in the development of materials for its use. However, teachers and other staff members are in agreement that we are just beginning to tap the potential of the Listening-Viewing Center for improving instruction and for freeing the teachers for more creative activities.

At the Listening-Viewing Center, elementary school students can vicariously trek along the trail with Lewis and Clark and voyage across the ocean with Columbus, by viewing sequences of actual photographs taken in those areas as they listen to a sound narration through headphones. At another time, a research group may obtain information in depth on the development of missiles or the medical aspects of space flight through specially-ordered filmstrips and tapes.

Continued on page 8

More Effective Instruction Through Technology

PROGRAMMED LEARNING AND "TEACHING MACHINES"

Programmed learning and "teaching machines" are designed to individualize instruction and to provide an extra arm to the teacher. They will never replace the teacher, any more than the automatic washing machine will replace the housewife. They do motivate learning and have some unique advantages:

- **They are self-corrective.** They immediately reinforce correct responses, correct errors, and give directions for subsequent action.
- **They provide for** *individual pacing*. Each student can proceed at his own rate.
- **They free the teacher for more creative teaching,** and for more individual work with students.
- **Some of the more sophisticated types prevent cheating** and can provide a record of errors and data for subsequent analysis and statistical study.

Programmed learning involves the bringing together of sound principles of learning and teaching techniques in a systematic, coherent, *controlled* approach to learning. It does not, necessarily, depend on "teaching machines" — but may feature programmed textbooks.

In Pasadena, pilot programs were introduced in 1961, involving programmed texts in junior and senior high schools and Pasadena City College. Subsequently, self-teaching devices have been used successfully in the Roosevelt School for the Handicapped and Continuation High School.

Currently, a programmed Algebra course is offered at Pasadena City College and programmed courses in English are offered at both Continuation High School and Pasadena City College.

A novel and particularly successful "teaching machine" has been produced and constructed at Pasadena City College in the Department of Engineering and Technology, under the direction of Assistant Professor Lawrence Johannsen. This device involves individual student stations and a master board, which enables the instructor to continually check student understanding through their responses, and thus modify instruction through this ongoing comprehensive, objective evaluation.

Though programmed learning can never replace that interchange of ideas between student and teacher which lies at the heart of the educational process, it has great possibilities for helping the student learn more efficiently, giving teachers more time for creativity and individual work with their students, enriching the curriculum, and broadening the student's knowledge.

EDUCATIONAL TELEVISION

Television is an important influence in today's classroom — stimulated thinking, awakening curiosity and imagination, informing and inspiring, motivating toward further study. Educational television permits a host of authorities and master teachers to visit the classrooms, and permits students to witness vivid presentations within their own room that they could not otherwise see.

Pasadena has been among the leaders in the nation in the use of educational television.

ELEMENTARY SPANISH

"Una aventura española," a program of teaching Spanish by television to elementary school youngsters, developed and produced by the Pasadena City Schools, has attracted national attention and is now being distributed across the country by the Heath de Rochemont Corporation.

The Pasadena program is now seen by more than 1,000,000 pupils throughout the nation, in classrooms in California, Oregon, Utah, Arizona, North Carolina, and Texas. 100,000 pupils in 96 school districts in the eight counties of Southern California view the program regularly, and it is beamed to the several northern California areas, including San Francisco Bay, Sacramento, and counties around Redding.

"Una aventura española" presents to the students an adventure in learning to speak Spanish. Three 15-minute lessons are telecast weekly for all fifth- and sixth-graders. Since the best way to learn a language is to live in the country where the language is spoken, the Pasadena City Schools staff works diligently in simulating this type of experience.

The Pasadena approach is a team approach, involving elementary classroom teacher, the foreign language expert via television, and other teaching tools, such as teacher's guide, pupil activity books, high-fidelity records, tape recorders, sound filmstrips, and testing materials — providing students in Pasadena with an articulated foreign language program, featuring an audio-visual-lingual approach.

OTHER CURRICULAR AREAS

In addition to the Spanish lessons, Pasadena's elementary schools receive telecasts for fourth, fifth, and sixth grade modern mathematics and special enrichment programs in American history and science. TV programs to provide background in modern mathematics are used by teachers, who meet before school hours to view the telecasts.

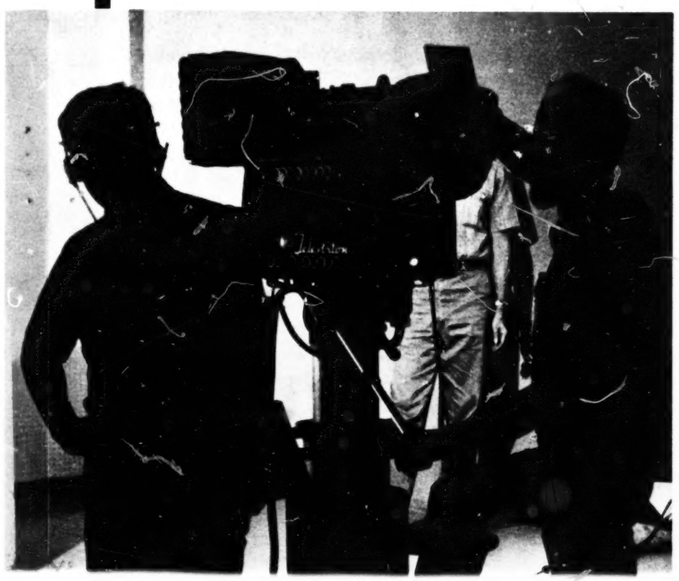
The Los Angeles City schools originates one hour of programs each day in primary reading, elementary and junior high science, music, art, and social science.

CONVERSION TO UHF

All television sets used by classes in the Pasadena City Schools are being converted so that they may receive UHF (ultra high frequency) channels, as well as the present educational programs over KCOP Channel 13.

The master plan for conversion includes installation of an antenna system at each school which will provide clear reception of UHF and VHF television and FM radio.

The conversion will allow Pasadena's classes to view KCET, Channel 28, the finest and most up-to-date of the educational television stations in the nation. KCET televises instructional television programs during the normal school hours, including Pasadena's "Una aventura española," and in-service programs for teachers before and after school. There are plans also to carry college credit courses during early evening hours.



CLOSED CIRCUIT TELEVISION

The current installation of closed circuit television at Pasadena City College and of a transmitting station will make it possible for the school district to eventually have its own closed circuit microwave TV system. Through this installation, along with the relay station for UHF, a district-wide communication system will be possible.

The system will provide tremendous possibilities in four areas at the college:

- Teacher self-evaluation through the use of a videotape recorder.
- Student evaluation.
- Direct instruction by tape.
- Electronics training for the TV and Radio Controls classes.

AUDIO-VISUAL TECHNIQUES

Audio-visual techniques have made a tremendous impact on modern education. Film projectors (sound and filmstrip), tape recorders, record players, transparent, opaque, and overhead projectors, radios, listening-viewing centers, and television sets, plus a great variety of display materials including pictures and models, are provided to Pasadena's teachers through Audio-Visual Services.

The primary function of audio-visual materials is to provide experiences whereby a student can build up a storehouse of meanings. Audio-visual materials make meaning more exact, more concrete, and more valid.

Research shows that the teaching of concepts can be accomplished more efficiently by using audio-visual materials and methods. Learning acquired through the audio-visual approach is retained for a significantly longer period than learning acquired by purely verbal teaching.

Statistics dramatize the great usage of audio-visual materials in Pasadena. Last year, teacher orders from the film library totalled more than 40,000 for a single year for the first time. This, coupled with the number of orders sent out by the visual library, make a total of 47,935 teacher orders packed and delivered for the year 1963-64, compared with 5,000 orders just 15 years before.

The production staff of Audio-Visual Services continues to prepare quantities of materials for use by staff members of the Pasadena City Schools. These include photographs, graphics, and visuals for television, publications, speeches, in-service education, and other special projects.

The Audio-Visual Service uses data processing equipment to maintain an inventory of audio-visual equipment in the school district.

More Effective Instruction Through Technology

TECHNOLOGY AND VOCATIONAL EDUCATION

Advances in technology, particularly in the automation of mechanical processes, have been both eliminating old jobs, and, at the same time, creating new ones. The number of unemployed remains high because too few people are trained to fill occupations that require special skills. An increasing number of the available jobs requires a high school education that includes training in business subjects.

Curriculum and teaching methods have responded with additions and changes to meet the need. Many of the emerging occupations in the office field, for example, are in the area of data processing. Pasadena's high school curriculum next fall will include Introduction to Data Processing Experiences for business majors.

Secretarial students now find it mandatory to have experiences in machine transcription as business and industry move away from traditional types of shorthand. Modern technology has produced certain devices that implement the teaching of business subjects. These include the *secretarial laboratory*, where individual programs of instruction may be selected by individual students; the *Control Reader* and *Skill Builder*, specially designed projectors for both group and individual use; and filmstrip sets.

TECHNOLOGY AND MUSIC

The influence of technology and modern inventions in electronics has played an important part in the approach to teaching music. Many inventions, since the beginnings with Edison and his phonograph in the early 1900's, have provided music teachers with important and effective tools:

- **The modern electronic organ** utilizes both the vacuum tube and solid state devices.
- **Tape recorders** have been used effectively in individual and ensemble musical development, and for teaching music appreciation.
- The high state of development of the **electronic phonograph**, both monaural and stereophonic, has brought realism and fidelity of music performance to the classroom.
- The **Strobo Conn**, an electronic tuner, reveals to the student whether or not he is playing on pitch.
- The electronic metronome has in great measure superceded the familiar clock spring powered metronome.
- **FM radio** has been used most effectively in Pasadena in presenting listening lessons for elementary teachers and students. Fifteen-minute programs, broadcast daily, are prepared by music supervisors.

TECHNOLOGY AND READING

Technology has influenced the teaching of reading through the development of mechanical devices and equipment to assist the teacher. The art of teaching reading is enhanced by the use of carefully selected learning equipment, by which the student can often be motivated in his acquisition of reading skill.

Among devices used as tools in some phases of the reading program in Pasadena are:

- the **tachistoscope**, used for building vocabulary through flashing words and/or phrases on a screen at a pre-set speed.
- the **Controlled Reader**, used to overcome regression (eyes looking back over material already read), to develop directional attack by presenting continuous reading material in a left-to-right direction, and to increase speed in reading.
- many reading **films**, as well as **filmstrips**, are available to the teacher as supplementary material to provide motivation and enrichment.
- the **accelerator** or **pacer**, by which the student develops faster reading rate through directional control.
- the **tape recorder**. A student may have his oral reading taped and then played back for analysis with the teacher. In the listening center, the student may listen to a tape for individualized instruction. In a remedial program, as the teacher reads and comments on the selection via tape, the student reads the same selection from the book before him. To complete the activity, the student writes answers to questions that test his comprehension of the material.

Technology has thus influenced the reading program by providing motivational tools that assist the teacher in large and small group instruction. Some tools are better used in remedial programs; others, in the developmental area of reading. Wherever they are employed, they are instruments used effectively by the trained teacher to devlop skills that enable students to read books with comprehension, appreciation, and enjoyment.

PASADENA CITY COLLEGE

New technologies mean new curricula, new instructional media, new employment opportunities, and better education.

The post-Second World War generation is history's first to experience several major technological changes within the span of one adult's working life. Those now entering the employment market may expect, on the average, three major occupational changes during their working years.

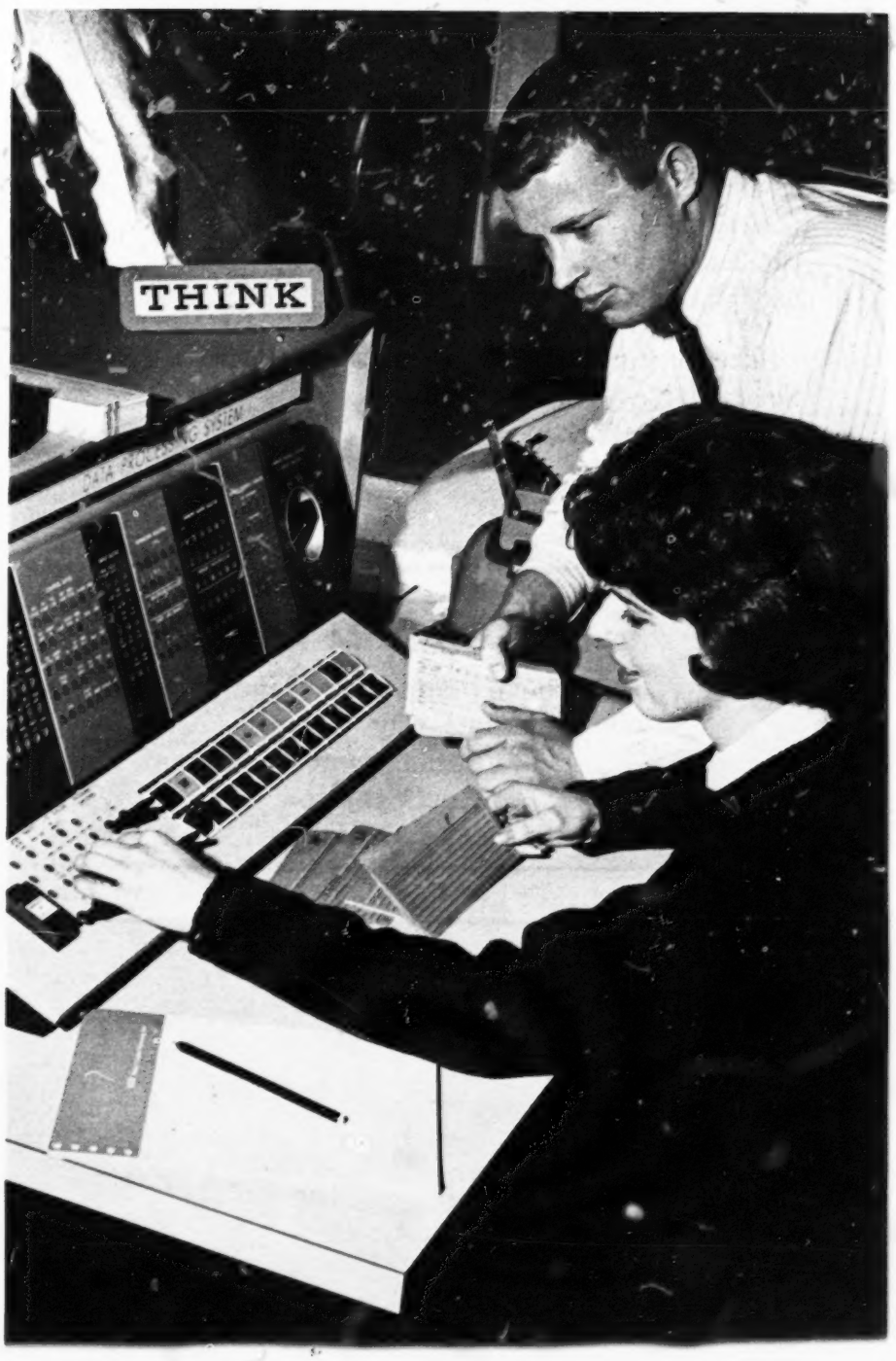
This spells "change" for community college curricula and instructional methods. Educational television, videotape recordings, FM broadcasting, computer sciences, and automation have entered many historic occupations; an expanding range of electronic, scientific, and nuclear instruments are greatly affecting the "how" and "what" of teaching.

At Pasadena City College, many noted specialists, a page from "Who's Who" in local business and industry, provide wise guidance at regular curriculum advisory meetings. Pasadena City College is thus insured of the most effective instructional materials, methods, and new courses and curricula aimed at emerging new job opportunities and the changing needs of local industry.

New curricula and/or departments include:

- **Television**
  - Occupational preparation in video performing arts and technical aspects.
  - Videotape recording.
  - Closed circuit instructional television.
- **Computer Sciences**
  - Occupational preparation for business and industry.
  - Preparation for employment in research.
  - Computer courses for students in other m[illegible]rs.
  - Facilities and assistance to faculty and administration.
- **FM Radio**
  - Station "KPCS," 89.3 megacycles, 370 watts covering the greater San Gabriel Valley with over 40 hours/week air time. (Program schedules available through P.C.C.)
  - Music instruction for elementary schools.
  - Elementary school Spanish re-broadcasting.
  - Occupational preparation in radio, speech arts, electronics, and station engineering.
  - Direct transmission of a wide range of school sports, forum speakers, panel series.
  - College credit course work provided through KPCS.
- **Chemical Instrumentation**
  - Occupational preparation for employment embodying a mixture of Chemical Engineering and applied electro-mechanical-chemical technician work.
  - Filling the employment gap resulting from automation technology and expanding research.
  - Use of electronic, nuclear, and scientific instruments integrated into education for the kinds of jobs now evolving.
- **Nuclear Technology**
  - Occupational preparation for employment as a nuclear technician in nuclear power plant operation, transportation, medical, and life sciences, and other high-energy applications.
- **Numerical Control Machining**
  - Occupational extension training for master machinists.
  - Numerical controls course with experience on machinery and controls.
- **Astronomy-Celestial Mechanics**
  - Astronomy courses for students seeking future technical or professional employment in the space sciences.
  - Courses for general education to help students gain literacy about their world and universe.
  - New Planetarium console and projector for the major aspects of astronomical study.
  - Experimental use of 9-inch and 20-inch reflecting telescopes.
  - Special programs for college student body, elementary and secondary school students on field trip assignment, and community service lecture programs.

P.C.C. students using computer



ABRAHAM LINCOLN ELEMENTARY SCHOOL

(Continued from page 2)

two, headed by a special teacher and providing instructional trips based on language activities.

- **Remedial reading program** for fifty third- and fourth-graders.
- **Library program** for grades three through six, carried out by a teacher-librarian.
- **Orientation program** with a special teacher working in the areas of orientation of new children and parents, counseling, and coordinating the efforts of community social work agencies.
- **Enrichment program** providing a rich variety of cultural activities such as youth concerts, special assemblies, theater parties.
- **Parent education program** including classes in child development and a class in English for Spanish-speaking parents.
- **In-service education program** involving the services of the district staff, and of outstanding consultants from universities.

Staff members at Lincoln School are excited about teaching; they enjoy working with children with a rich variety of ethnic and cultural backgrounds; they are dedicated to Pasadena's policy of providing quality education for children of all abilities.

We are proud to honor Lincoln Elementary School as School of the Month for April.

SPOTLIGHT PARADE

DR. FRANK YETT, Acting Chairman of Computer Sciences, **Pasadena City College**, was a major speaker in the University Council for Educational Administration Career Development Seminar held in Iowa City, Iowa, last month. His topic was "The Computer and Its Use in Institutional Control, Planning, and Research."

JERRY TODD, Assistant Professor of Men's Physical Education, **Pasadena City College**, was the only judge selected from the Western United States at the National Collegiate Gymnastic Championships in Carbondale, Illinois, last month.

DOROTHY WILKES, Nurse, **Eliot Junior High School**, is Chairman-elect of the California School Nurses Organization, Southern Section.

HERB COHEN, EDWARD FOX, and GERALD RUSH, teachers at **Eliot Junior High School**, have been awarded scholarships to National Science Foundation Institutes. Cohen will study cellular biology and bio-chemistry at Arizona State University; Fox will study Geology at the Ohio State Field Station at Ephraim, Utah; Rush will study mathematics at the Central Connecticut State College.

LISTENING-VIEWING CENTERS

Continued from page 3

Others can build arithmetic-mathematic skills by using a *Tachist-o-Flasher* in connection with a *filmstrip* — flashing problems onto the small table screen, enabling them to gain skill and speed in computation, or recognizing missing numbers in algebraic formulae. At another time, pupils gain skills in oral vocabulary, reading vocabulary, and increase their fund of knowledge, appreciation, and understanding through filmstrips and tapes in the reading and literature field.

Pasadena Schools in Action
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VOL. 7 APRIL, 1965 NO. 8